Microsoft

Azure Developer Community Call

Focus Topic: Introducing the Azure Mission-Critical framework
February 16th, 2023

Contents

- Azure Developer Community 2.0
- Community News
- Service Updates & Announcements
- Introducing the Azure Mission-Critical framework

  by Sebastian Bader & Martin Šimeček

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Azure Developer Community 2.0

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2 Calls - 1 Community

Formate

Die Azure Developer Community Calls gibt es in zwei verschiedenen Formaten, die immer im Wechsel stattfinden.

News & Hot Topics

Focus Topic, Azure Updates & Community News

Hol dir Updates zu aktuellen Azure-Ankündigungen, neuen Services und Community-Aktivitäten. Neben den wichtigsten News erhältst du in den News & Hot Topics-Sessions einen Deep Dive zu einem aktuellen Entwicklungs- oder Cloud-Thema.

Ask Me Anything

Wir beantworten deine Fragen

Du arbeitest an einem Azure-Projekt und brauchst einen Rat? Dann komm damit zu den Ask Me Anything-Sessions[1] des Azure Developer Community Calls. Unser Cloud-Native Experte und Host Dennis Zielke und ein Subject Matter Expert aus unserem Team beantworten dort Fragen zu einem Schwerpunktthema, geben dir Tipps und verraten Best Practices.

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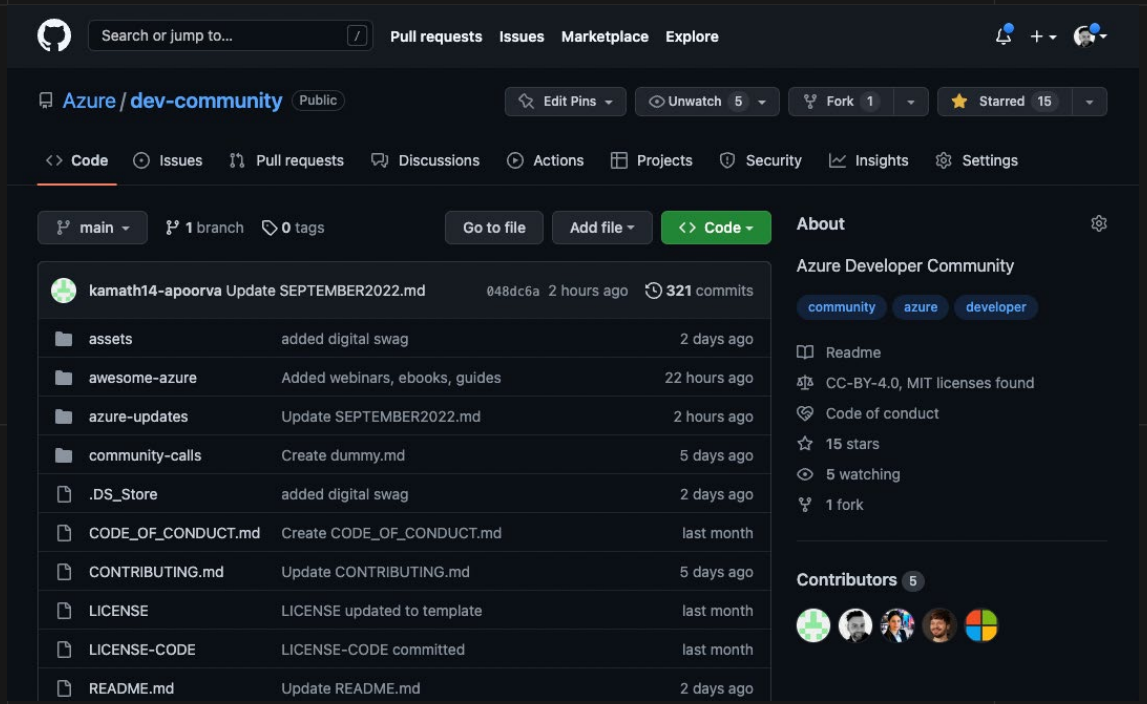
Contribute to the Community Hub



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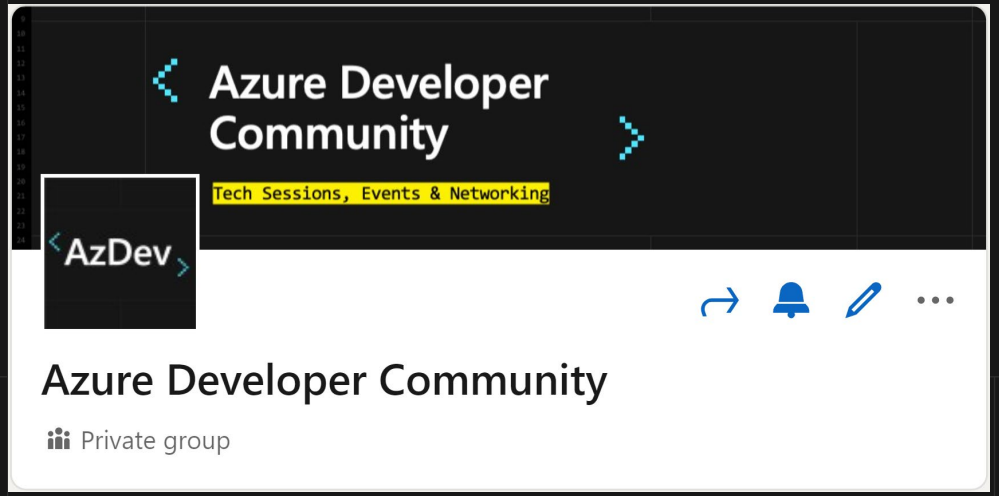
Join our LinkedIn Group



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Past & Upcoming events

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Upcoming community calls

Microsoft Reactor

	Date	Format	Topic	QR Code
	Mar 2	Ask Me Anything	Optimizing costs for your cloud native workloads	
	Mar 30	News & Hot Topics	Web development	*Available soon, check our Meetup group for updates*
	Apr 20	Ask Me Anything	Multi-region Deployments	

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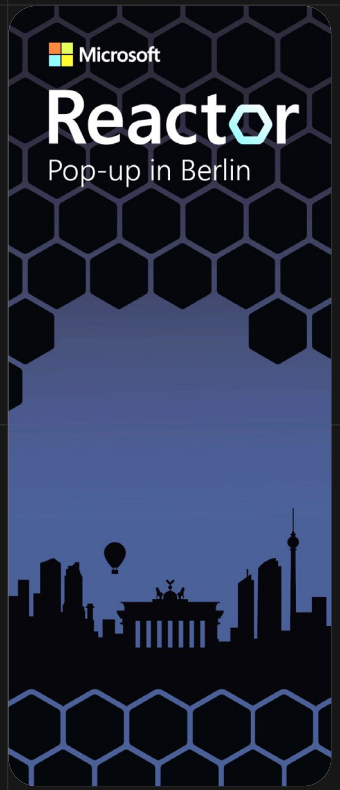
Microsoft Reactor Popup Berlin



Date	Topic	QR Code
Mar 30	Web development	*Available soon, check our Meetup group for updates*
Apr 27	Python	*Available soon, check our Meetup group for updates*

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meetup

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Azure News & Updates

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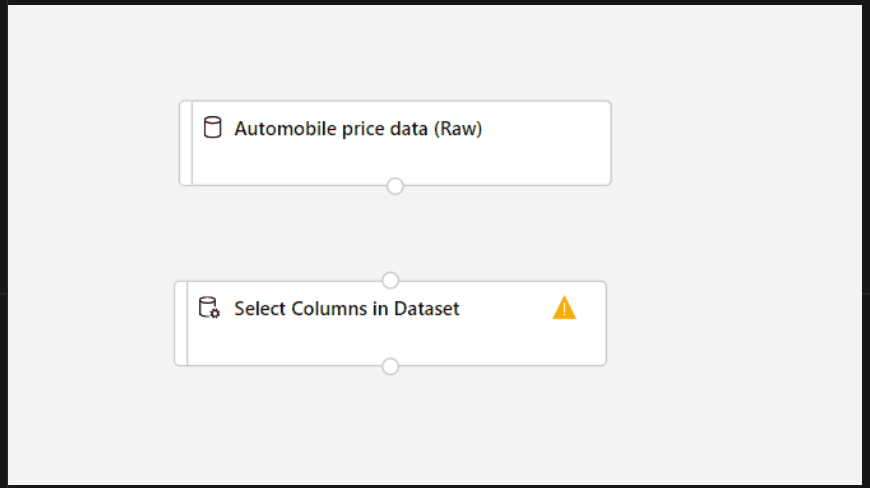
Azure Machine Learning (Preview)



Learn more

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Azure Storage - 5 GB Put Blob (GA)

Learn more

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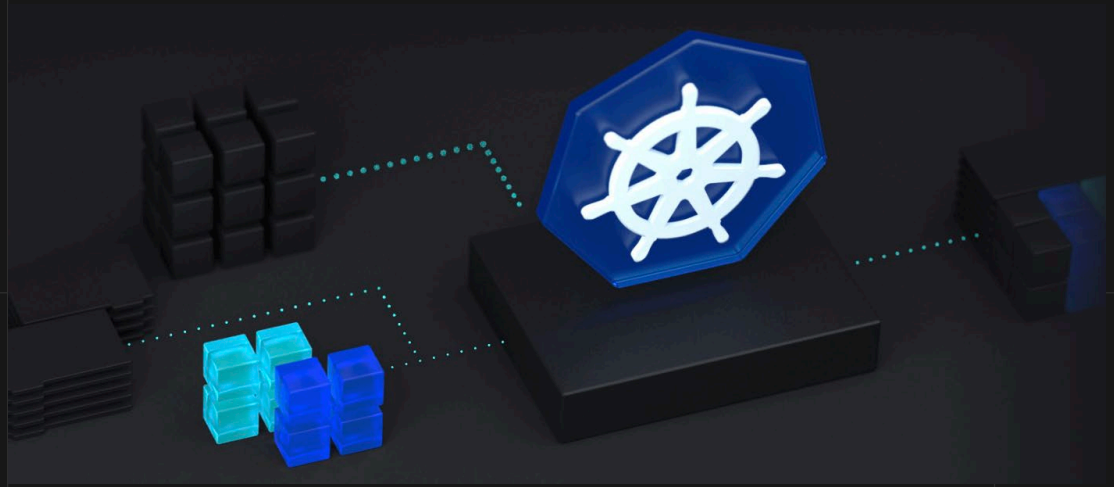
Azure Kubernetes Service - Pricing Tiers



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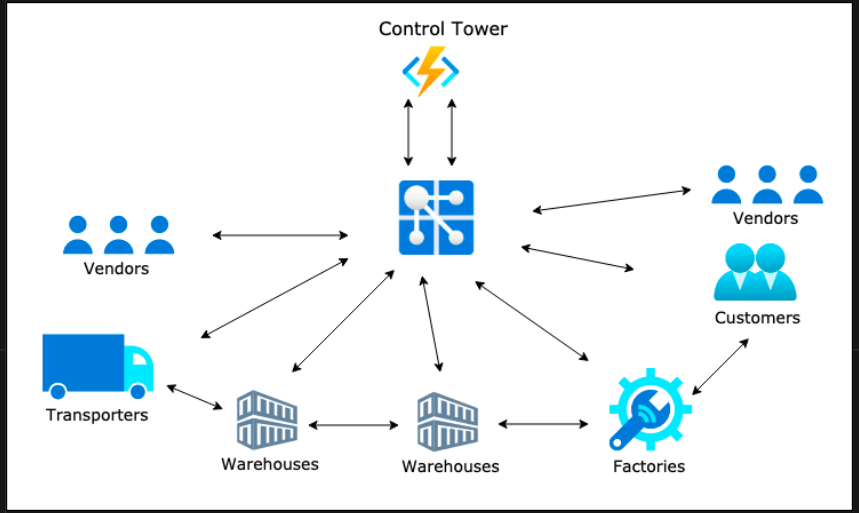
Azure Web PubSub - Premium Tier



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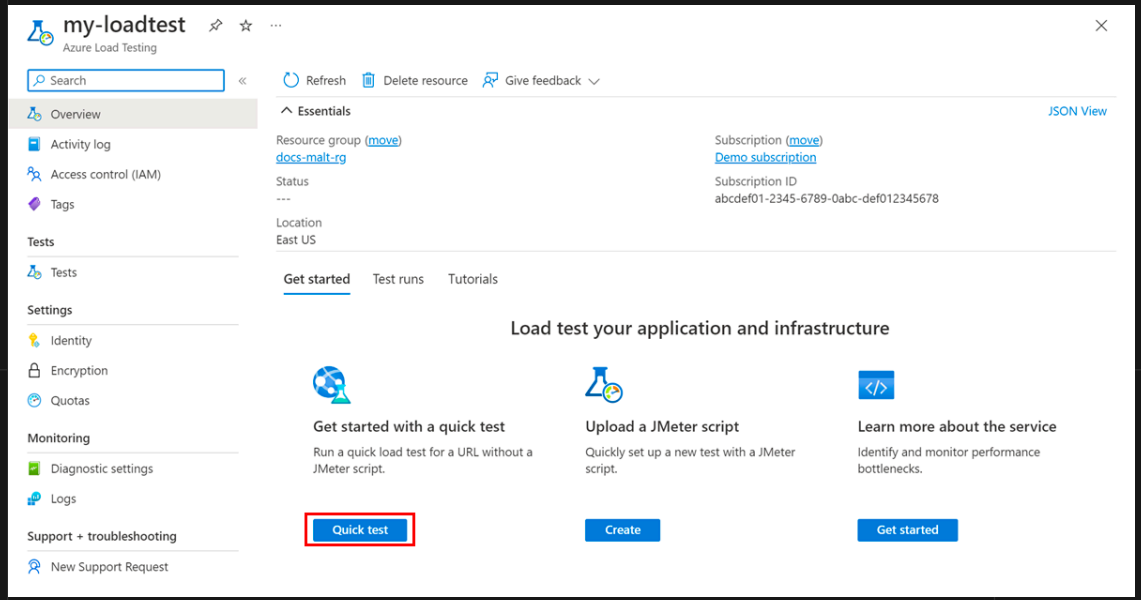
Azure Load Testing (GA)



Learn more

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Hot Topic:

Introducing the **Azure Mission-Critical** framework

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Microsoft

How to build mission-critical applications in Azure

Microsoft Reactor Berlin, Feb 2022

Martin Šimeček, Sebastian Bader

What is a ‘mission-critical’ app?

What's mission-critical?

Everyone has their own perception of criticality

"How should I build an app on Azure that's always ON and never DOWN?"

What's Azure Mission-critical?

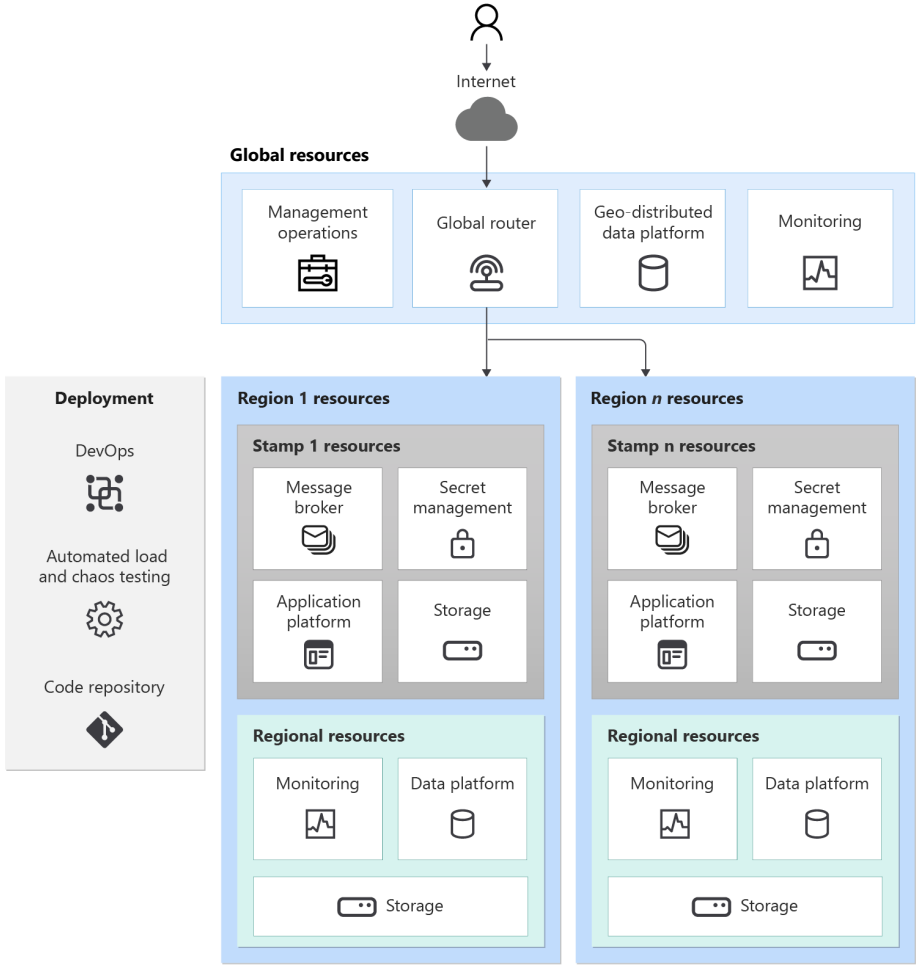
Guidance

Reference implementations

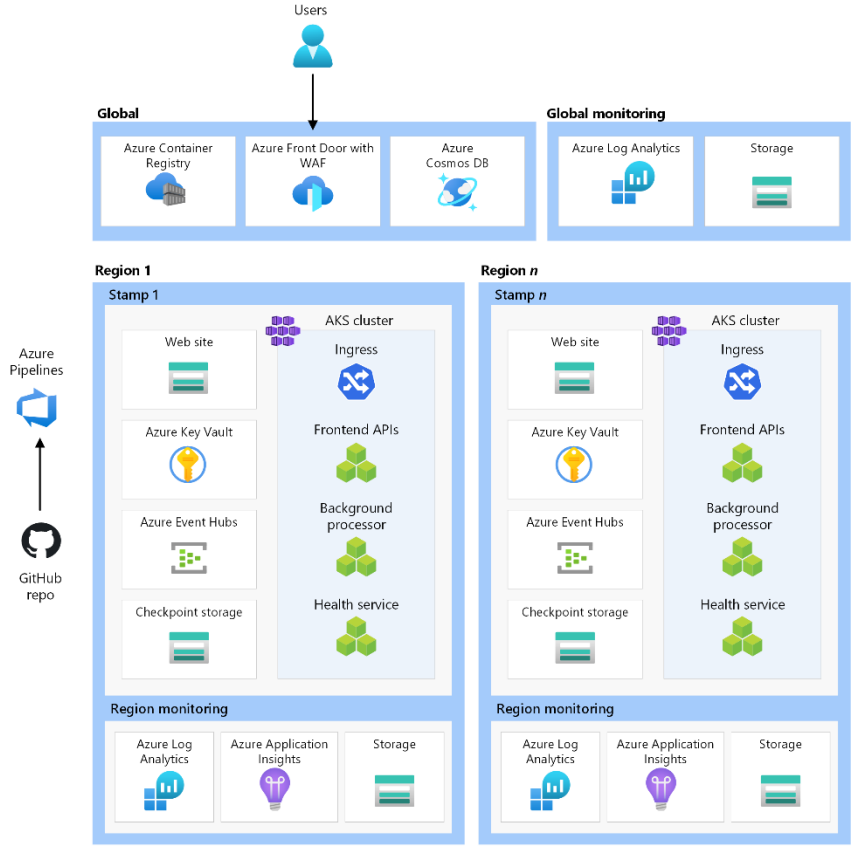
Key principles

- Active/active
- Global vs. regional resources
- Stamps and scale units
- Operational automation by design

Architecture



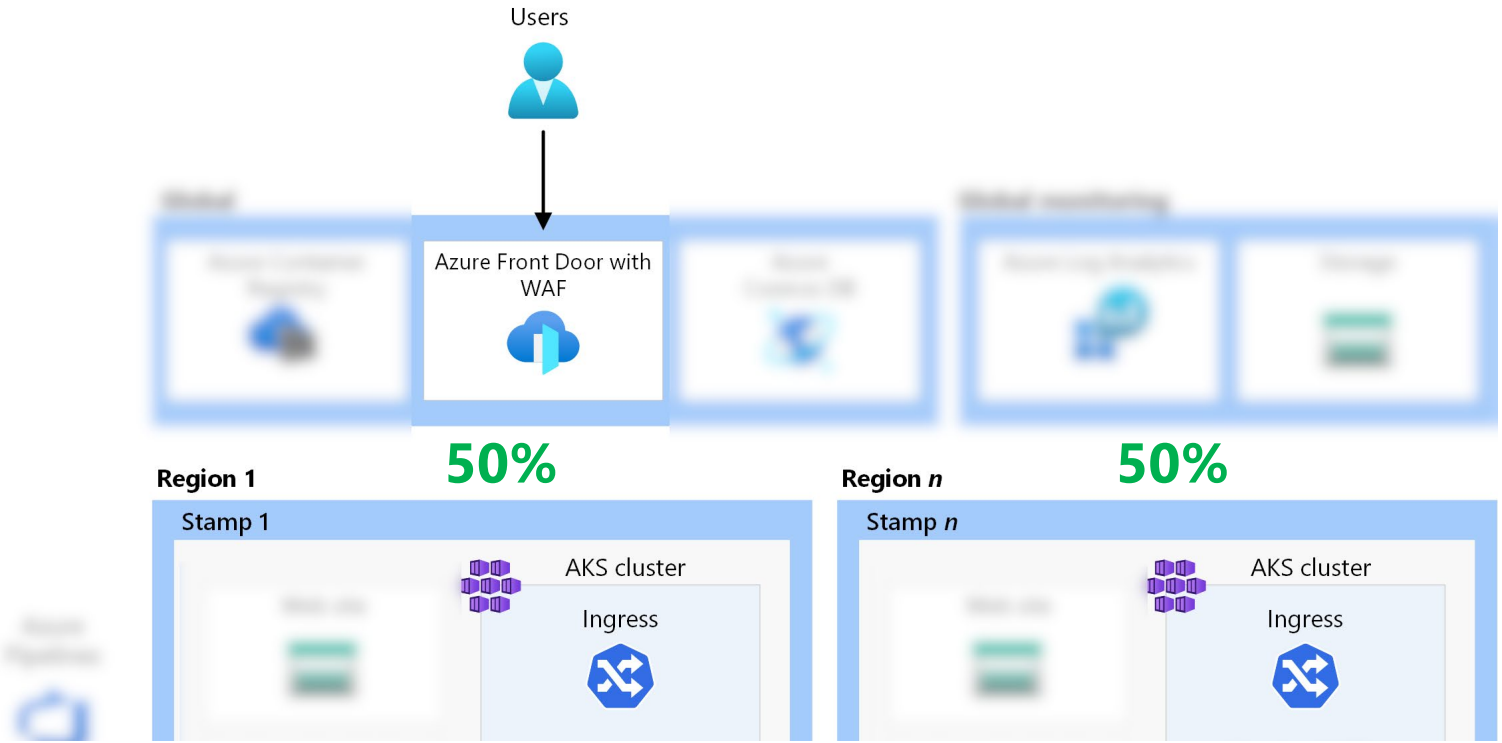
Implementation



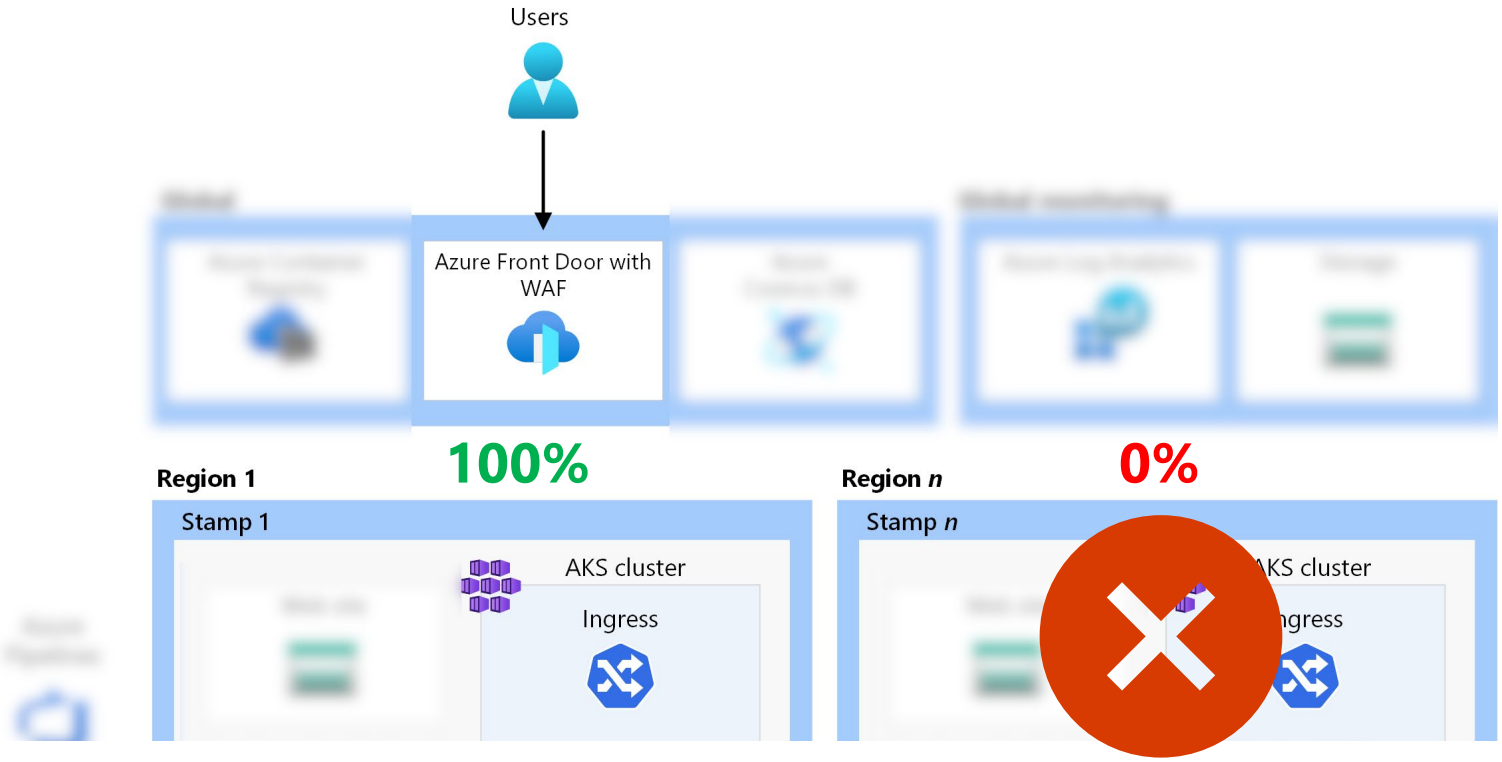
Resiliency & self-healing

The app should not go down. If it does, it should heal automatically.

Automated traffic switch



Automated traffic switch

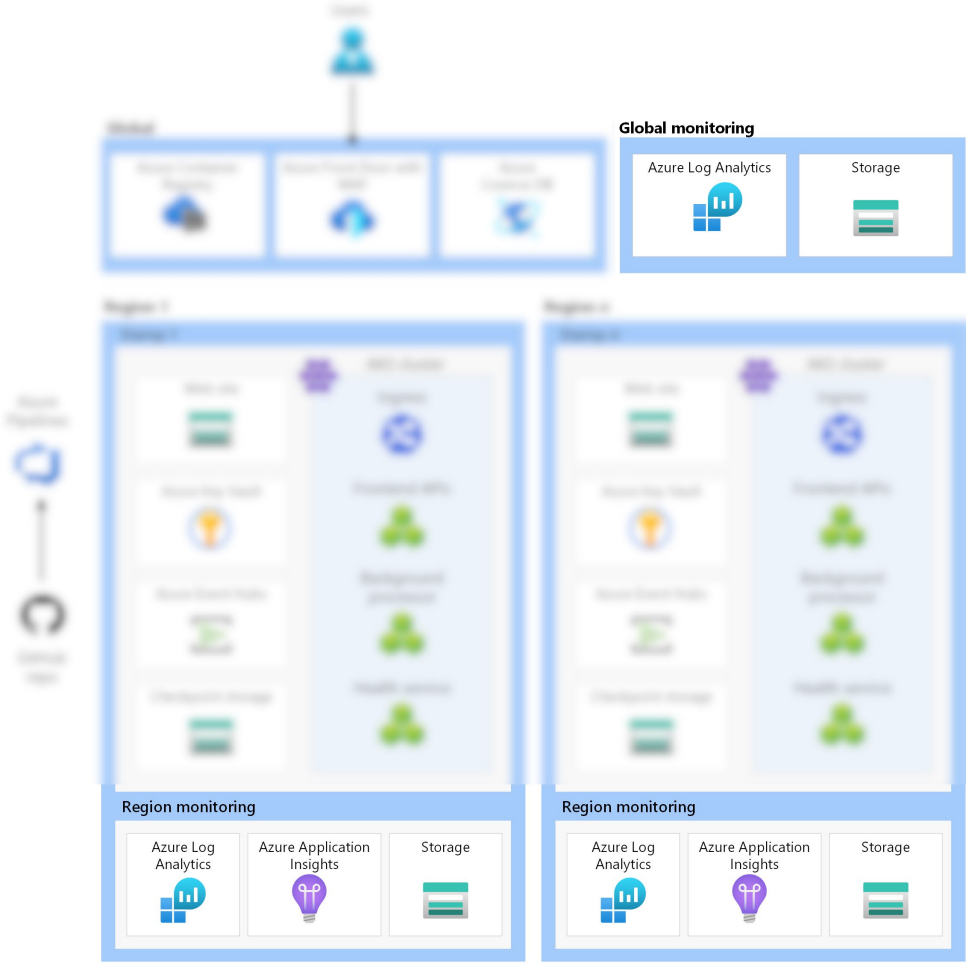


Demo: Front Door

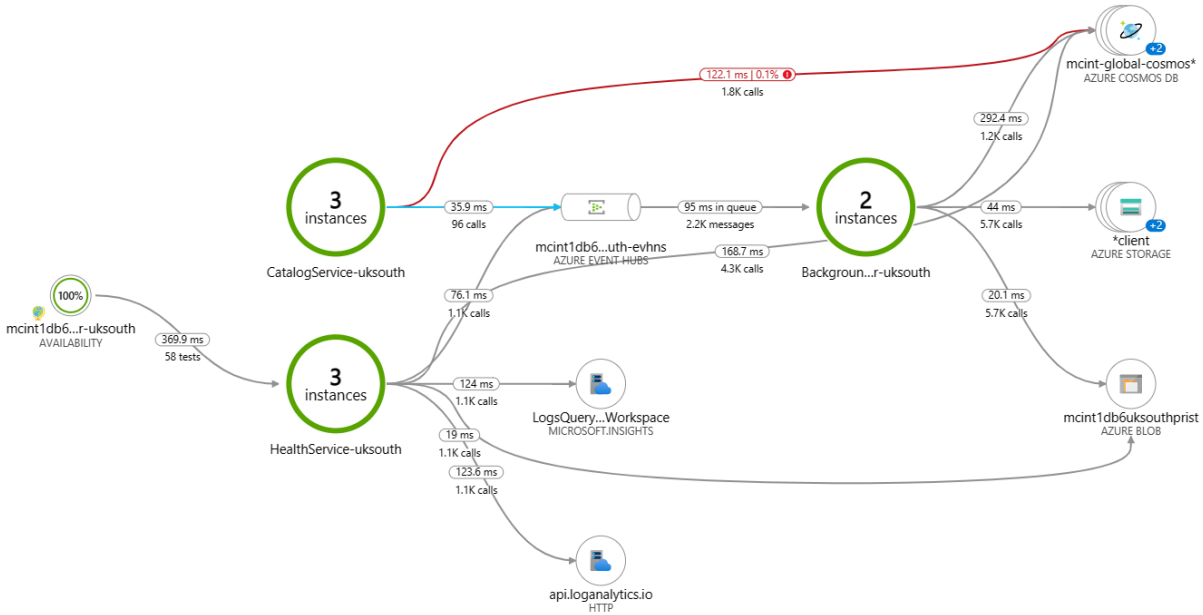
Observability & health modeling

When something bad is about to happen, you need to know right away.

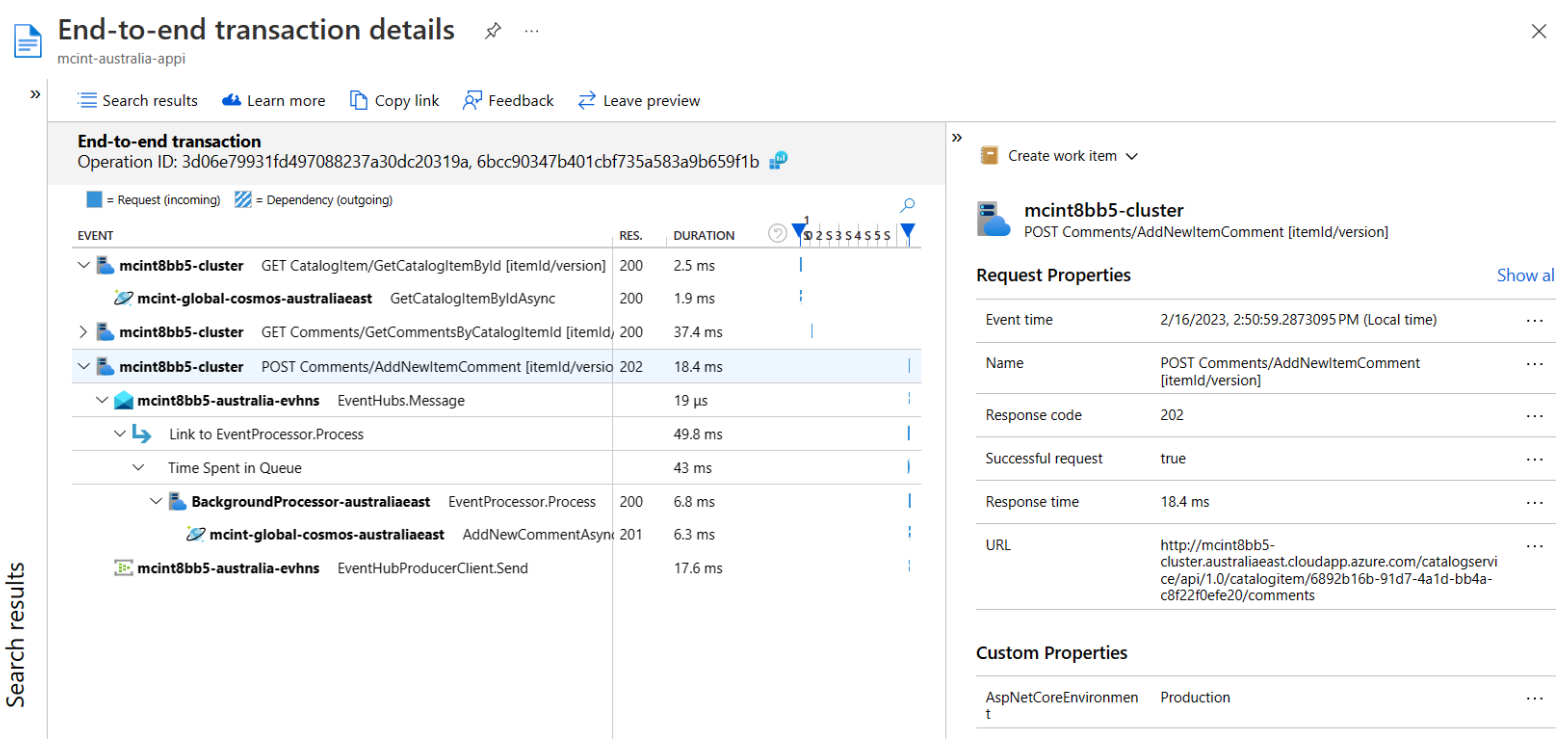
Logs


Global monitoring
Azure Log Analytics
Storage
Region monitoring
Azure Log Analytics
Azure Application Insights
Storage
Region monitoring
Azure Log Analytics
Azure Application Insights
Storage

Distributed tracing



Distributed tracing



Demo: Observability

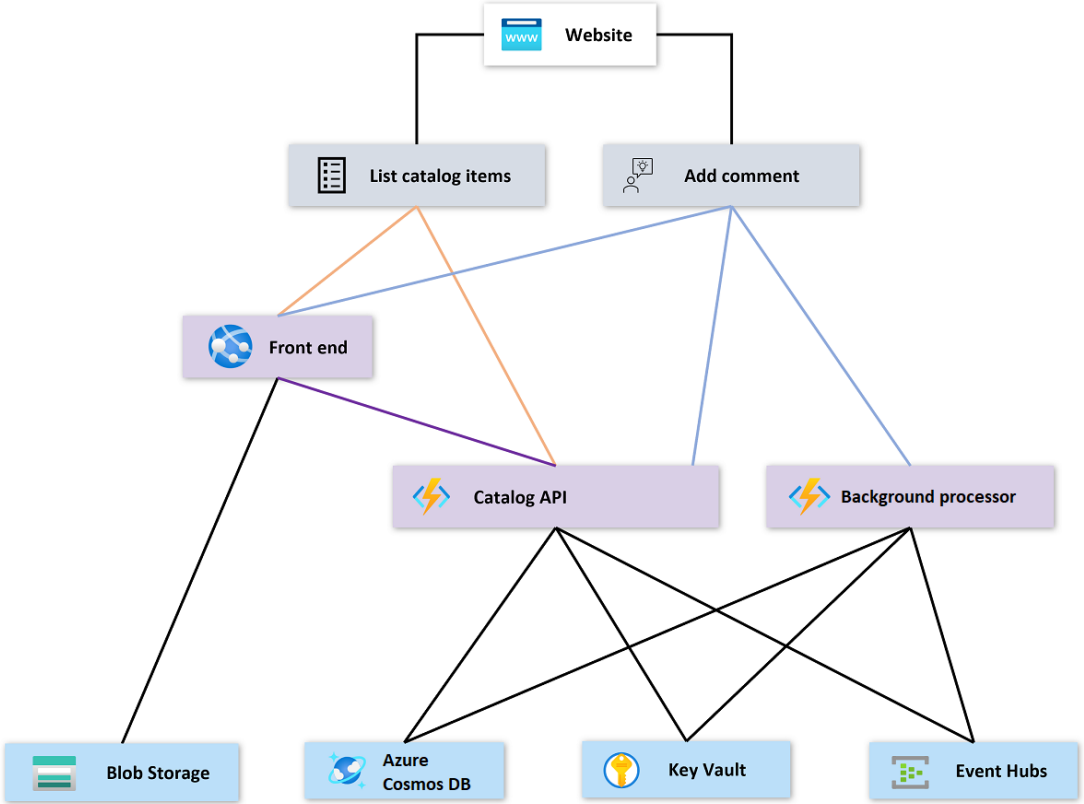
Health modeling

The process of quantifying application health in the context of business requirements and drive automated action.

Health modeling

Use traffic light colors to show if your app is healthy.

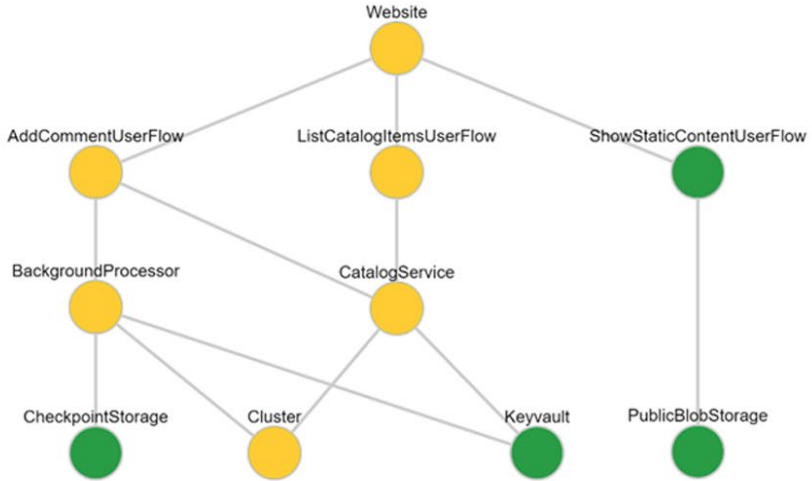
Health model examples



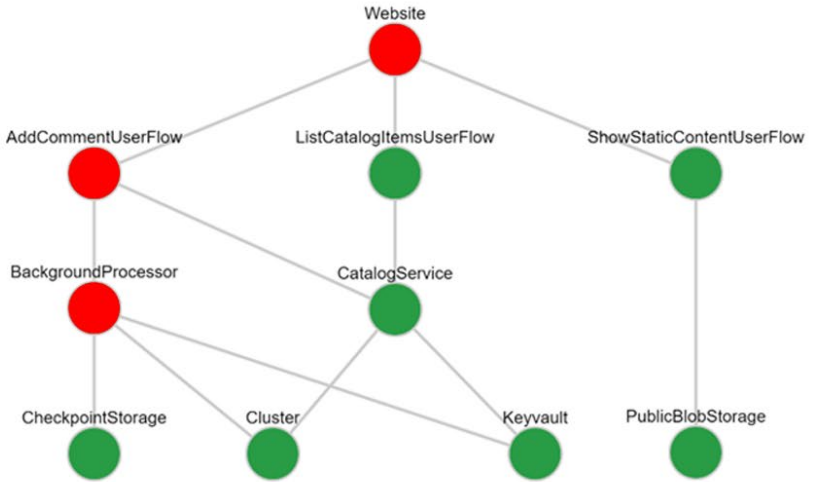
Health model examples

Component	Indicator/metric	Healthy	Degraded	Unhealthy
List catalog items user flow	Underlying health state	Front end healthy and Catalog API healthy		
Add comment user flow	Underlying health state	Front end healthy, Catalog API healthy, and background processor healthy		
Front-end web application	# of non-20x HTTP responses/min	0	1-10	> 10
Catalog API	# of exceptions/sec	< 10	10-50	> 10
	Average processing time (ms)	< 150	150-500	> 500
Background processor	Average time in queue (ms)	< 200	200-1,000	> 1,000
	Average processing time (ms)	< 100	100-200	> 200
	Failure count	< 3	3-10	> 10
Azure Cosmos DB	DTU utilization	< 70%	70%-90%	> 90%
Azure Key Vault	Failure count	< 3	3-10	> 10
Azure Event Hubs	Processing backlog length (outgoing/incoming messages)	< 3	3-20	> 20
Azure Blob Storage	Average latency (ms)	< 100	100-200	> 200

Health model examples



Cluster at 70% autoscale capacity



BackgroundProcessor queue has 100 messages

Demo: Health model

Automation & DevOps

No human intervention should be necessary.

Automation & DevOps

IaC for everything

Pipelines for build & deploy

Dev environments on demand

Zero-downtime deployments

No updates, replace whole stamp

Demo: Automation in Azure DevOps

Continuous validation

Systems change, reliability requirements stay and need to be validated.

Continuous validation

Periodic load testing, revisiting baselines

Chaos testing – makes sense together with load testing

Mandatory automated runs on feature changes

Create a resource
Home
Dashboard
All services
FAVORITES
Resource groups
All resources
Recent
App Services
SQL databases
Virtual machines
Subscriptions
Azure Active Directory
Monitor
Microsoft Defender for Cloud
Advisor
Storage accounts
IoT Hub
Cognitive Services
App Service plans
Cost Management + Billing

Load Test run by ADO

Initiated on : 5/11/2022, 11:18:55 AM | PREVIEW

View all test runs | Stop | Refresh | Rerun | Compare | App components | Configure metrics | Download | Share | Delete | Auto refresh on (5s)

Test run details

Start time	End time	Engine instances	Test result	Status
5/11/2022, 11:18:56 AM		1		Executing

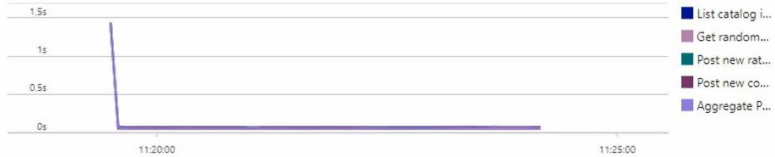
Client-side metrics

Requests : **All** | Percentile : **90** | Error type : **All** | Time range : **5/11/2022, 11:18:56 AM - 5/11/2022, 11:20:07 AM** | Group by : **5s**

Virtual Users (Max)

List catalog items **50** | Get random catalog item **50** | Post new rating **50** | Post new comment **50** | Aggregate **50**

Response time (successful responses)

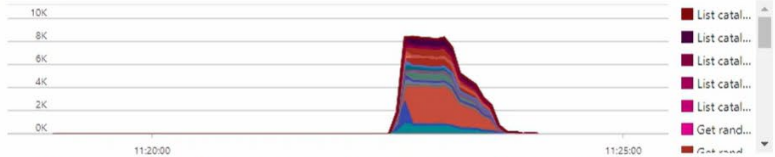


1/2 List catalog items Pct 90 **82,25 ms** | Get random catalog item ... **54,43 ms** | Post new rating Pct 90 **75,66 ms** | Post new comment Pct 90 **75,98 ms**

Requests/sec (Avg)

1/2 List catalog items **251,42 /s** | Get random catalog item **255,87 /s** | Post new rating **255,83 /s** | Post new comment **255,78 /s**

Errors (total)



1/4 List catalog items Error No... **0** | List catalog items Error 503 **7,4 K** | List catalog items Error 502 **654** | List catalog items Error 405 **0**

Server-side metrics

Create a resource
Home
Dashboard
All services
FAVORITES
Resource groups
All resources
Recent
App Services
SQL databases
Virtual machines
Subscriptions
Azure Active Directory
Monitor
Microsoft Defender for Cloud
Advisor
Storage accounts
IoT Hub
Cognitive Services
App Service plans
Cost Management + Billing

afe2efcb7-global-fd | Metrics

Front Door and CDN profiles

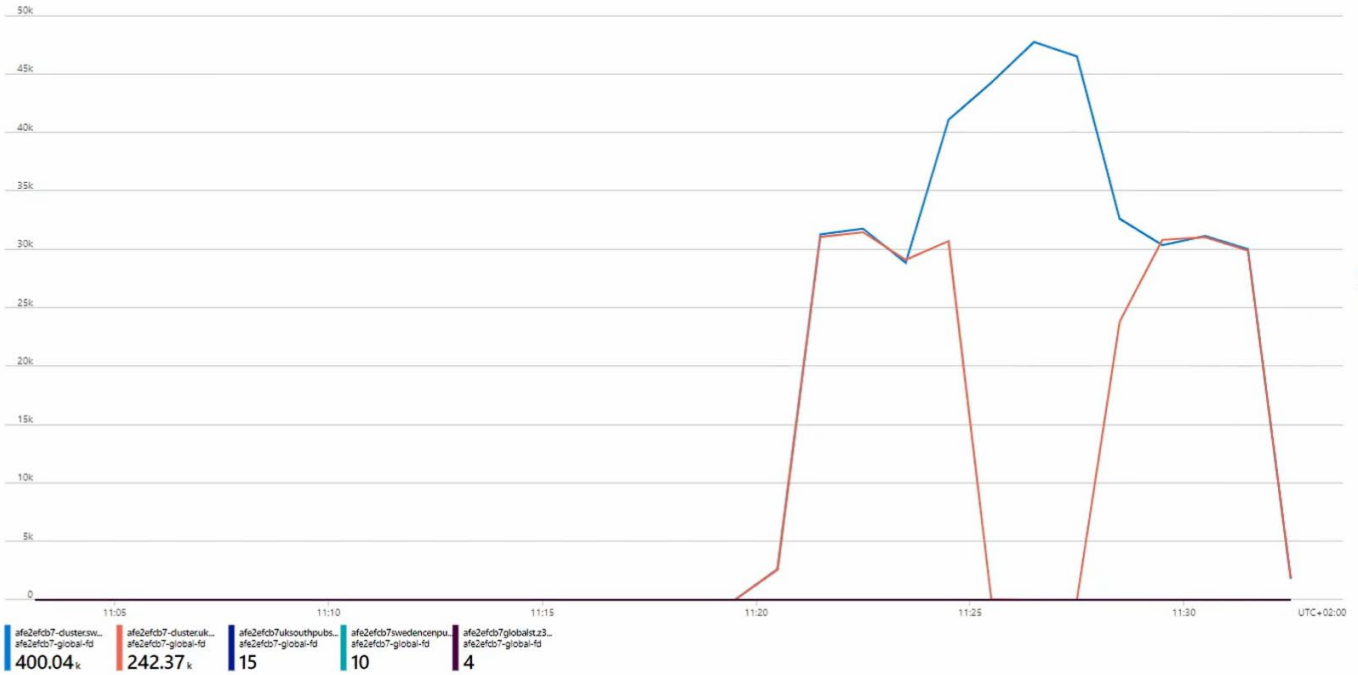
Search (Ctrl+/)
Overview
Activity log
Access control (IAM)
Tags
Settings
Front Door designer
Web application firewall
Rules engine configuration
Properties
Locks
Monitoring
Alerts
Metrics
Diagnostic settings
Logs
Automation
Tasks (preview)
Export template
Support + troubleshooting
Resource health
New Support Request

New chart | Refresh | Share | Feedback | Local Time: Last 30 minutes (Automatic - 1 minu...

Sum Backend Request Count for afe2efcb7-global-fd by Backend

Add metric | Add filter | Apply splitting | Line chart | Drill into Logs | New alert rule | Save to dashboard

afe2efcb7-global-fd, **Backend Request Count**, Sum | Split by = **Backend**



Create a resource
Home
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All services
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All resources
Recent
App Services
SQL databases
Virtual machines
Subscriptions
Azure Active Directory
Monitor
Microsoft Defender for Cloud
Advisor
Storage accounts
IoT Hub
Cognitive Services
App Service plans
Cost Management + Billing

Home > afe2efcb7-global-fd

afe2efcb7-global-fd | Metrics

Front Door and CDN profiles

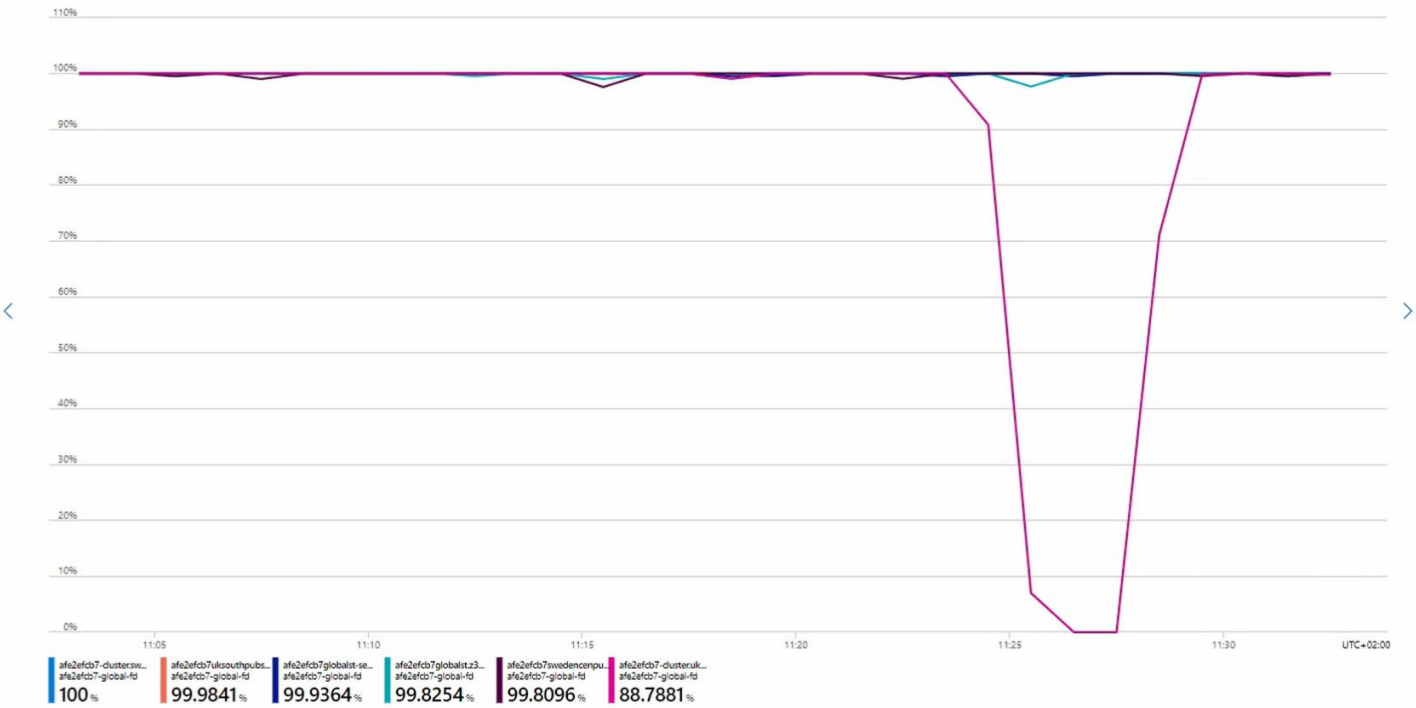
Search (Ctrl+/)
Overview
Activity log
Access control (IAM)
Tags
Settings
Front Door designer
Web application firewall
Rules engine configuration
Properties
Locks
Monitoring
Alerts
Metrics
Diagnostic settings
Logs
Automation
Tasks (preview)
Export template
Support + troubleshooting
Resource health
New Support Request

New chart | Refresh | Share | Feedback | Local Time: Last 30 minutes (Automatic - 1 minu...

Avg Backend Health Percentage for afe2efcb7-global-fd by Backend

Add metric | Add filter | Apply splitting | Line chart | Drill into Logs | New alert rule | Save to dashboard

afe2efcb7-global-fd, **Backend Health Percenta...** Avg | Split by = **Backend**

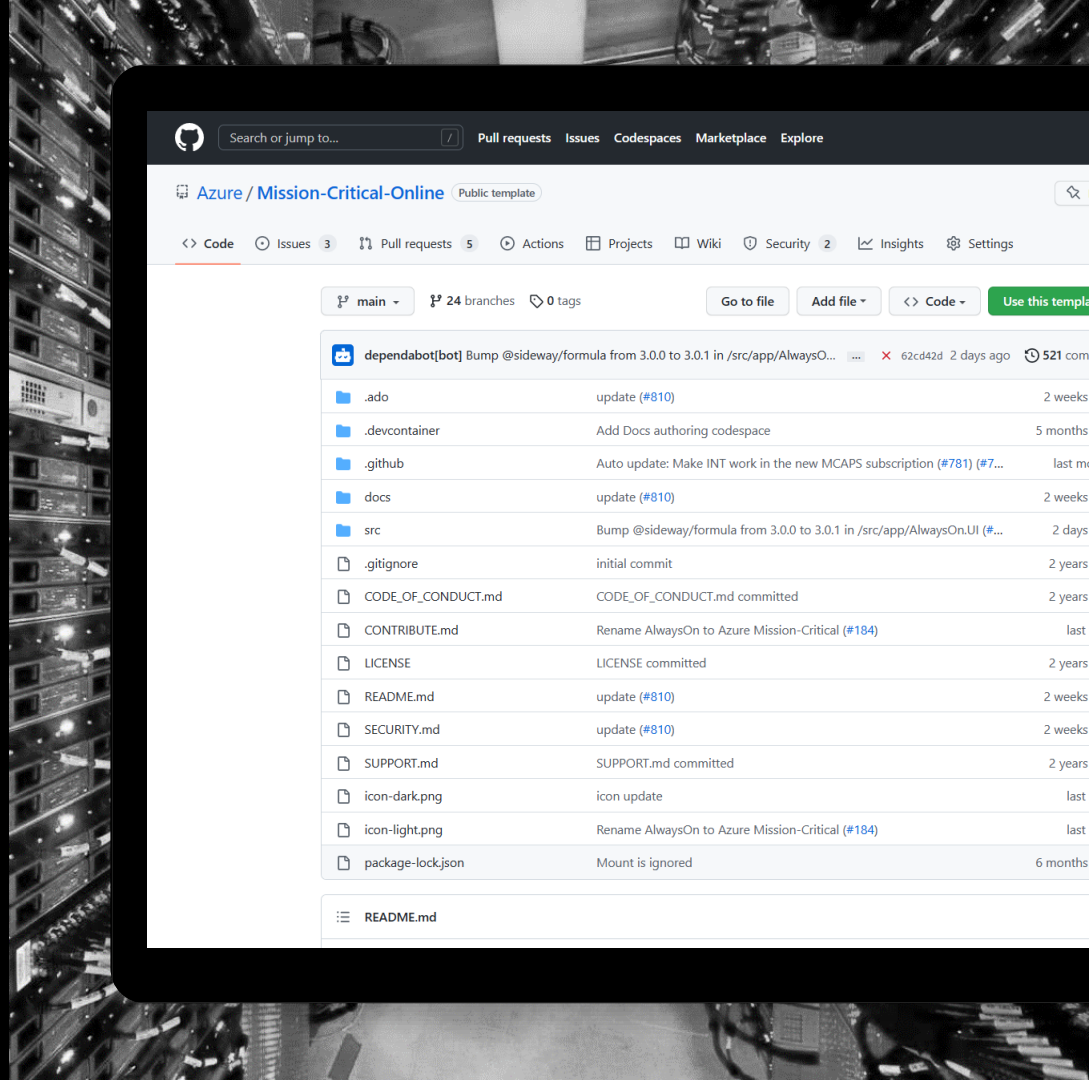


Resources

Azure Mission-critical is open-source

Reference implementations are developed in the open on GitHub.

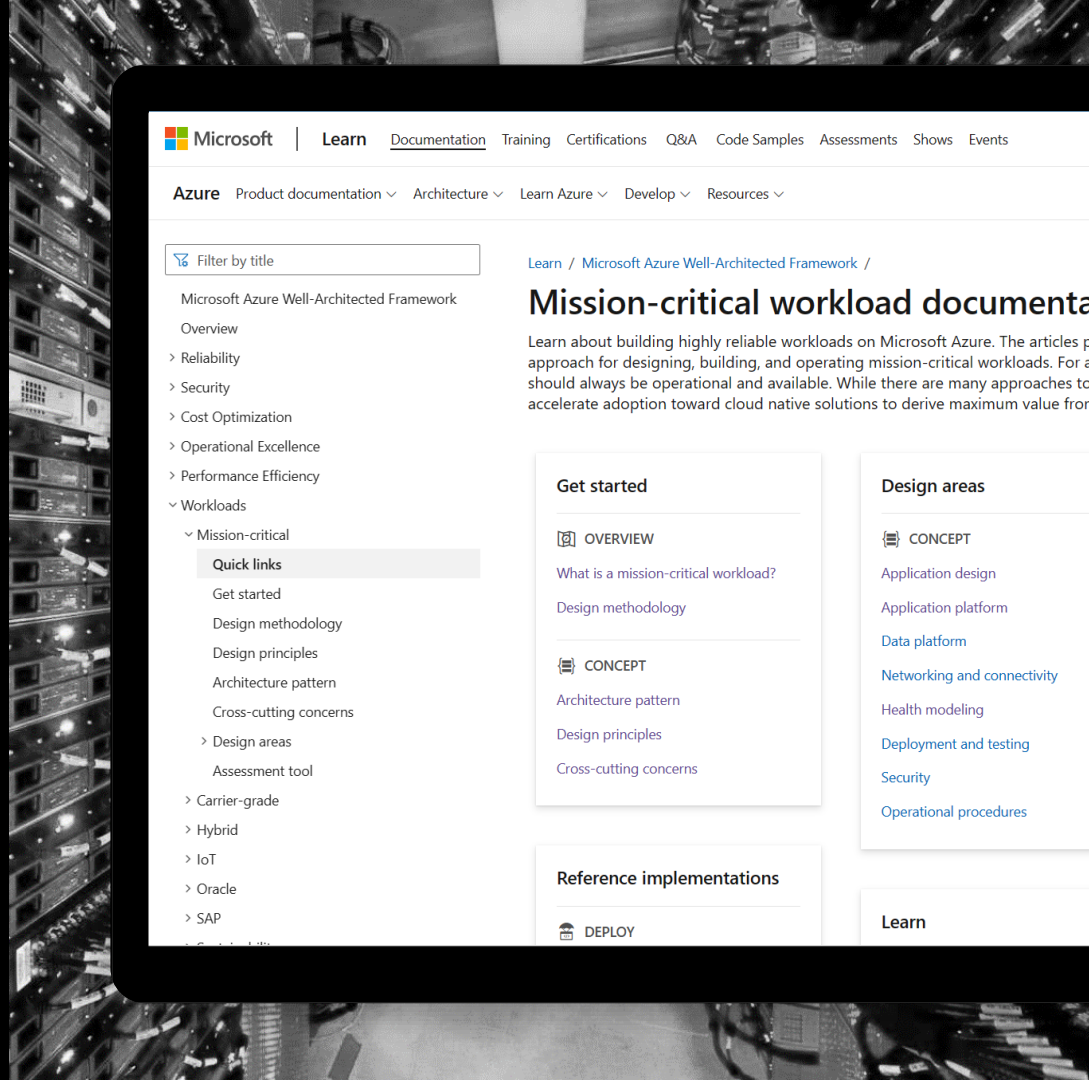
https://github.com/Azure/Mission-Critical-Online



Take a look at the guidance

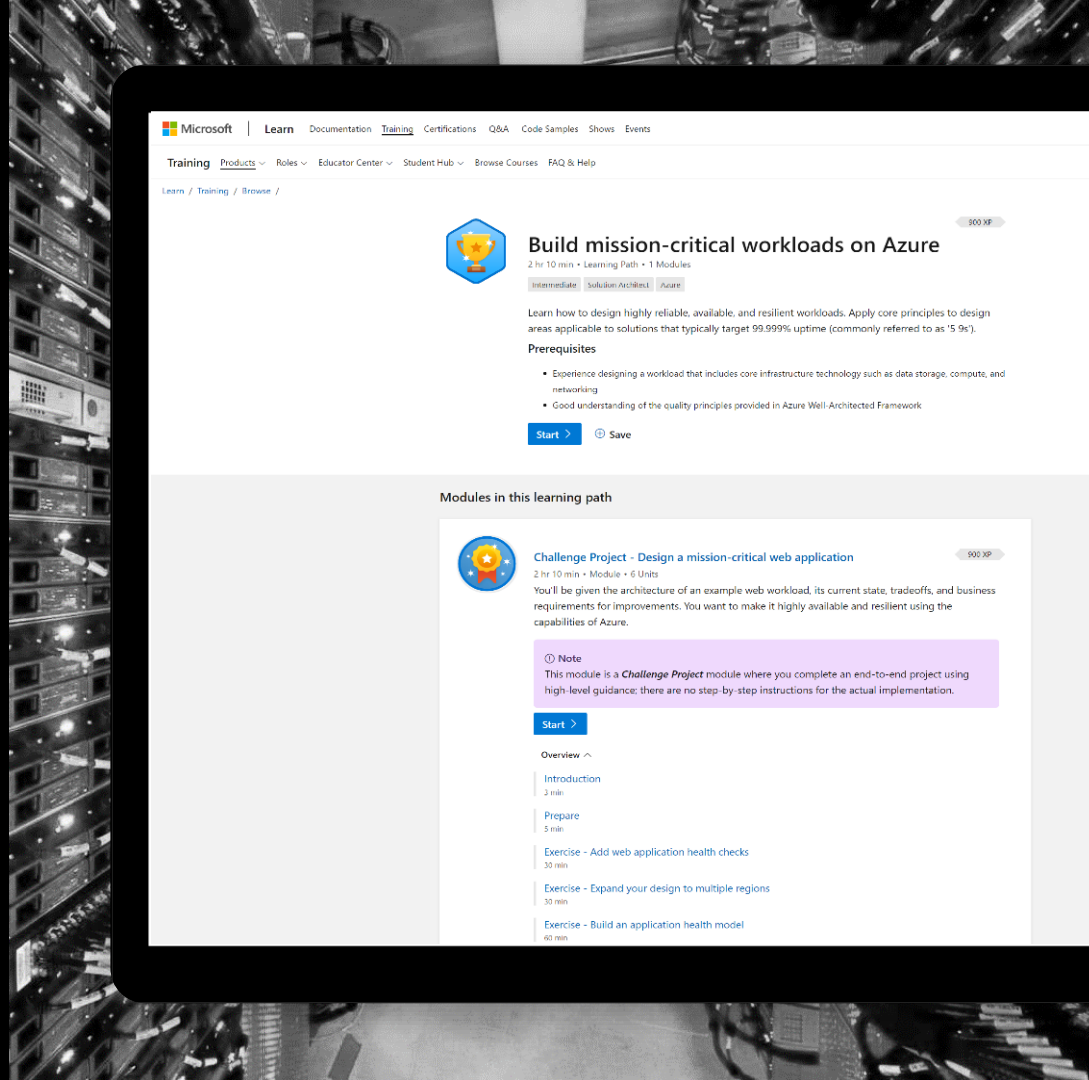
Full guidance, including specific considerations and recommendations, is available on Microsoft Learn.

Azure Mission-critical: Microsoft Learn



Learning Mission-critical

Targeted learning modules and training content to help customers absorb mission-critical guidance and technical artefacts.

Mission-Critical Learning Path

https://aka.ms/mission-critical/learn